

Observations of **Mimas** and **Enceladus** during the Saturn Ring Plane Crossing of August 1995

B.J. Buratti, J.A. Mosher (JPL/Caltech), P.D. Nicholson (Cornell University), R.G. French (Wellesley College), C. McGhee (Cornell University)

The satellites of Saturn were observed with the 60-inch telescope at Palomar Mountain during the Saturn Ring Plane Crossing (RPX) on August 9-12, 1995. Observations were obtained with a 1024 square CCD and a methane filter to reduce light from Saturn. During the four nights more than 250 images were obtained. These images enable a rare opportunity to obtain photometric measurements of Saturn's two inner medium-sized satellites, Mimas and Enceladus. Telescopic observations of albedo variegations on Mimas have never been obtained, while Enceladus was previously observed by Franz and Minis (Icarus vol. 24, p. 433, 1975). Voyager lightcurve observations of both satellites were obtained by Buratti and Veverka (Icarus vol. 58, p. 254, 1984): good orbital coverage was attained for Enceladus, but Mimas's coverage was limited to only one hemisphere (90-270 degrees). Our telescopic observations of Mimas are also somewhat limited (due to the similarity of Mimas's orbital period to a terrestrial day), but we did obtain measurements at longitudes not imaged by Voyager.

Voyager observations of Mimas (Buratti and Veverka, op. cit.) show no significant albedo variegations on the satellite. Our preliminary reductions, obtained by producing ratios of the brightness of Mimas with Titan (which has a well-established lightcurve), confirm this view and extend it to areas unseen by the spacecraft.

Our observations of Enceladus show that this satellite has albedo variegations of at least 100A on its surface. Unlike Tethys, Dione, and Rhea, Enceladus is brighter on the trailing side rather than the leading side. This result is in agreement with both the Voyager observations and the groundbased results of Franz and Minis. However, the amplitude of our derived lightcurve is less than that obtained by Franz and Minis.

Work funded by NASA.

Abstract submitted for 1997 DPS meeting

Date submitted: LPI electronic form version 5/97

Division for Planetary Sciences Abstract Form

DPS Category 12 Running # Session 0.00

Oral ☐ Poster ☐ Either ☐ Title only ☐

Will you serve as a session chair? Yes ☐ No ☐

Have you received your Ph.D. since the last DPS meeting?

Yes ☐ No ☐

Is your abstract newsworthy, and if so, would you be willing to prepare a news release and be available for interviews with reporters?

Yes ☐ No ☐ Maybe ☒

Paper presented by Bonnie J. Buratti

Jet Propulsion Lab
Mail Stop 183-501
4800 Oak Grove Dr.

Pasadena CA 91109 United States

Phone: 818-354-7427

Fax: 818-354-0966

Email: buratti@jplpds.jpl.nasa.gov

Special instructions: Tuc Jun 319:24:19 CDT 1997

Membership Status (First Author):

DPS-AAS Member ☐ Non-Member ☐

Student Member ☐ Student Non-Member ☐

Is this your first DPS presentation? Yes ☐ No ☐

Sponsor: